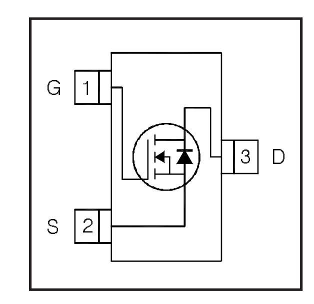
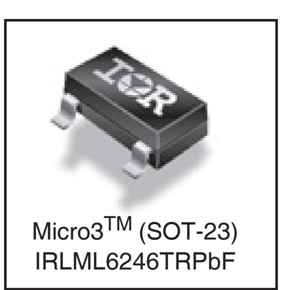


IRLML6246TRPbF

HEXFET® Power MOSFET

V_{DS}	20	V
$V_{GS\ Max}$	± 12	V
$R_{DS(on)}$ max (@V_{GS} = 4.5V)	46	mΩ
$R_{DS(on)}$ max (@V_{GS} = 2.5V)	66	mΩ




Micro3™ (SOT-23)
IRLML6246TRPbF

Application(s)

- Load/ System Switch

Features and Benefits

Features		Benefits
Industry-standard SOT-23 Package		Multi-vendor compatibility
RoHS compliant containing no lead, no bromide and no halogen	results in	Environmentally friendly

Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	20	V
I_D @ T_A = 25°C	Continuous Drain Current, V_{GS} @ 10V	4.1	A
I_D @ T_A = 70°C	Continuous Drain Current, V_{GS} @ 10V	3.3	
I_{DM}	Pulsed Drain Current	16	
P_D @T_A = 25°C	Maximum Power Dissipation	1.3	W
P_D @T_A = 70°C	Maximum Power Dissipation	0.8	
	Linear Derating Factor	0.01	W/°C
V_{GS}	Gate-to-Source Voltage	± 12	V
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	°C

Thermal Resistance

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-Ambient ③	–––	100	°C/W
$R_{\theta JA}$	Junction-to-Ambient (t<10s) ④	–––	99	

ORDERING INFORMATION:
See detailed ordering and shipping information on the last page of this data sheet.

Notes ① through ④ are on page 10



Electric Characteristics @ T_J = 25°C (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	20	—	—	V	V_{GS} = 0V, I_D = 250μA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.03	—	V/°C	Reference to 25°C, I_D = 1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	30	46	mΩ	V_{GS} = 4.5V, I_D = 4.1A ②
		—	45	66		V_{GS} = 2.5V, I_D = 3.3A ②
$V_{GS(th)}$	Gate Threshold Voltage	0.5	0.8	1.1	V	V_{DS} = V_{GS}, I_D = 5μA
I_{DSS}	Drain-to-Source Leakage Current	—	—	1.0	μA	V_{DS} =16V, V_{GS} = 0V
		—	—	150		V_{DS} = 16V, V_{GS} = 0V, T_J = 125°C
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	V_{GS} = 12V
	Gate-to-Source Reverse Leakage	—	—	-100		V_{GS} = -12V
R_G	Internal Gate Resistance	—	4.0	—	Ω	
gfs	Forward Transconductance	10	—	—	S	V_{DS} = 10V, I_D = 4.1A
Q_g	Total Gate Charge	—	3.5	—	nC	I_D = 4.1A
Q_{gs}	Gate-to-Source Charge	—	0.26	—		V_{DS} =10V
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	1.7	—		V_{GS} = 4.5V ②
$t_{d(on)}$	Turn-On Delay Time	—	3.6	—	ns	V_{DD} =10V②
t_r	Rise Time	—	4.9	—		I_D = 1.0A
$t_{d(off)}$	Turn-Off Delay Time	—	11	—		R_G = 6.8Ω
t_f	Fall Time	—	6.0	—		V_{GS} = 4.5V
C_{iss}	Input Capacitance	—	290	—	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	—	64	—		V_{DS} = 16V
C_{rss}	Reverse Transfer Capacitance	—	41	—		f = 1.0MHz

Source - Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	1.3	A	MOSFET symbol showing the integral reverse p-n junction diode. (D, G, S)
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	16		
V_{SD}	Diode Forward Voltage	—	—	1.2	V	T_J = 25°C, I_S = 4.1A, V_{GS} = 0V ②
t_{rr}	Reverse Recovery Time	—	8.6	13	ns	T_J = 25°C, V_R = 15V, I_F=1.3A
Q_{rr}	Reverse Recovery Charge	—	2.8	4.2	nC	di/dt = 100A/μs ②

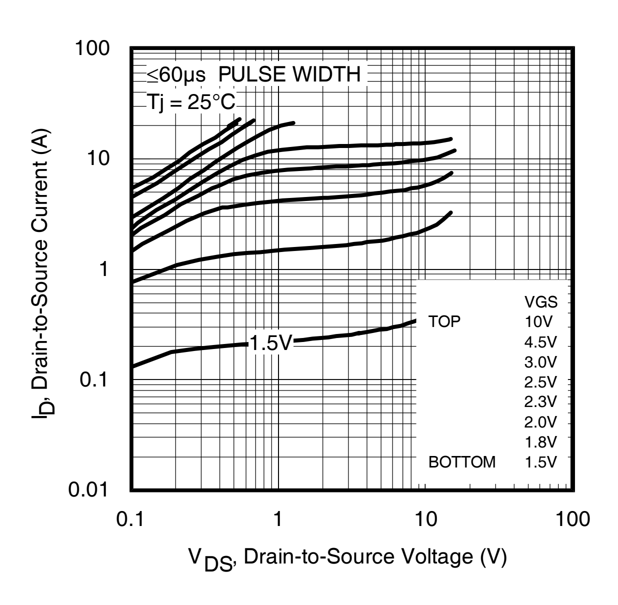


Fig 1. Typical Output Characteristics

≤60µs PULSE WIDTH
Tj = 150°C
VGS
TOP 10V
4.5V
3.0V
2.5V
2.3V
2.0V
1.8V
BOTTOM 1.5V
1.5V
ID, Drain-to-Source Current (A)
VDS, Drain-to-Source Voltage (V)

Fig 2. Typical Output Characteristics

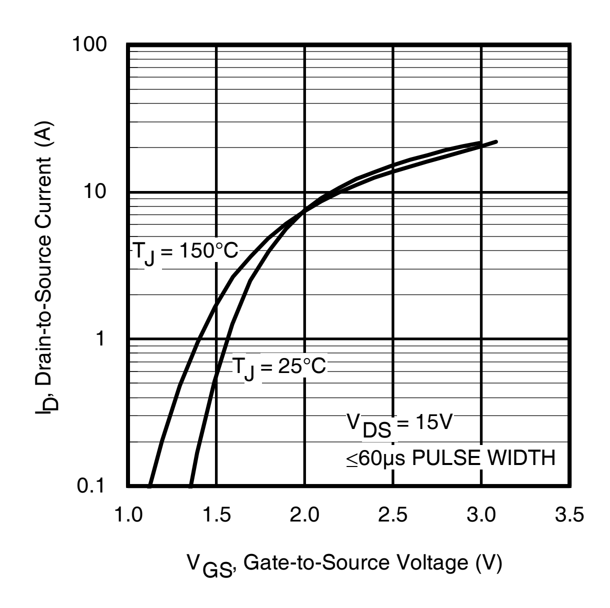


Fig 3. Typical Transfer Characteristics

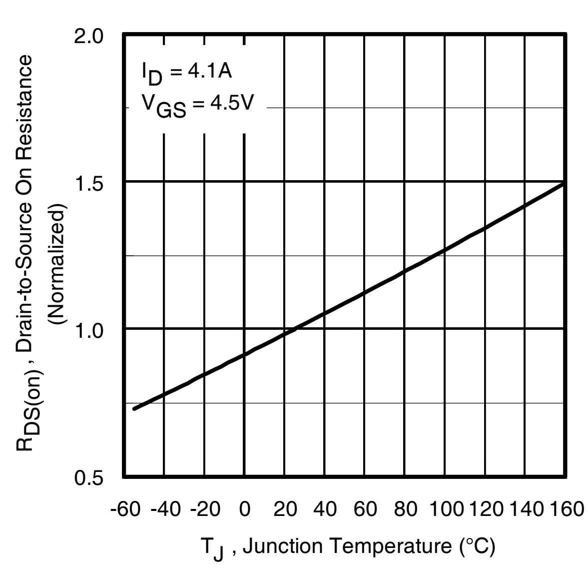


Fig 4. Normalized On-Resistance Vs. Temperature

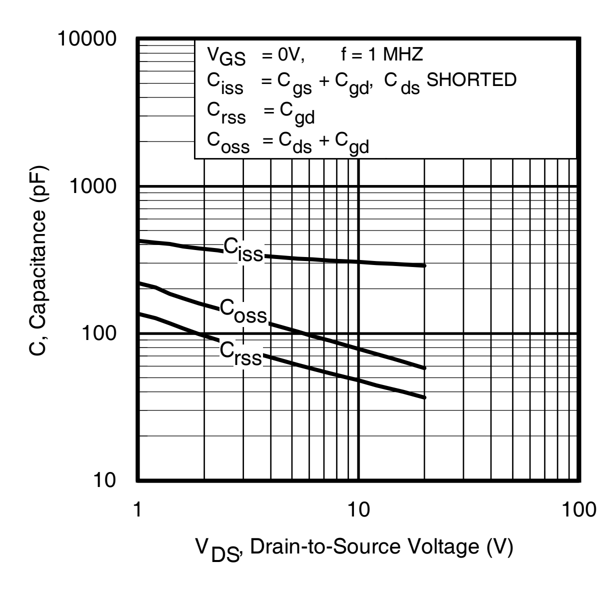


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

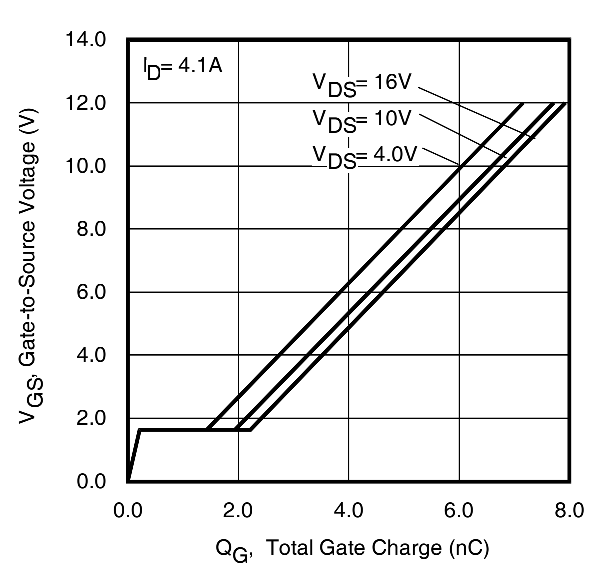


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

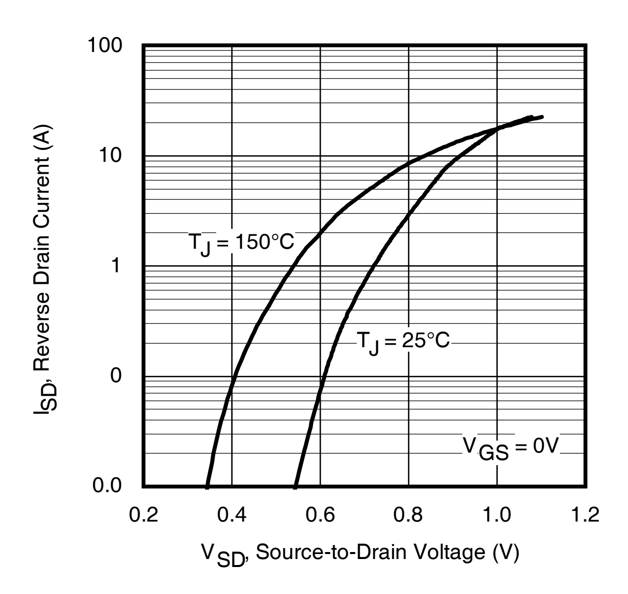


Fig 7. Typical Source-Drain Diode Forward Voltage

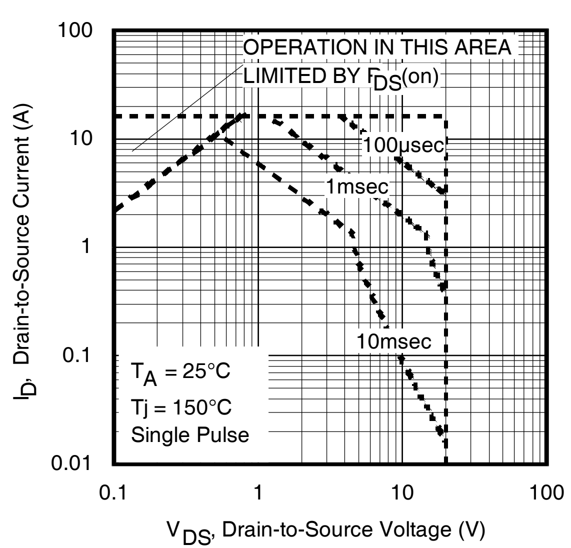


Fig 8. Maximum Safe Operating Area

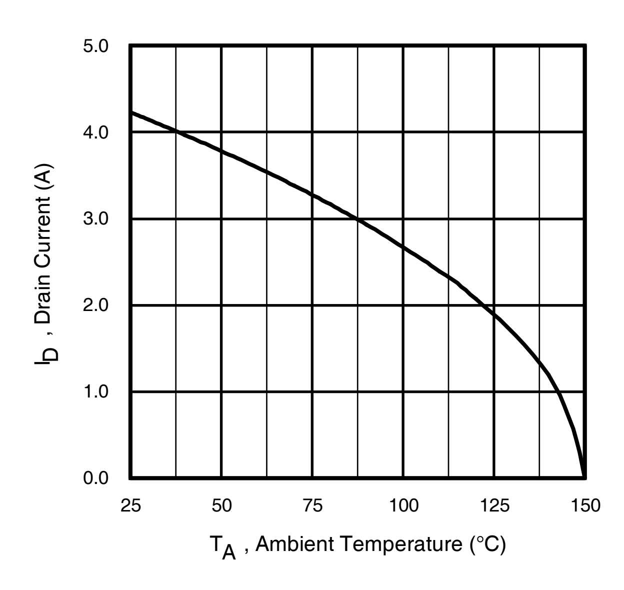


Fig 9. Maximum Drain Current Vs. Ambient Temperature

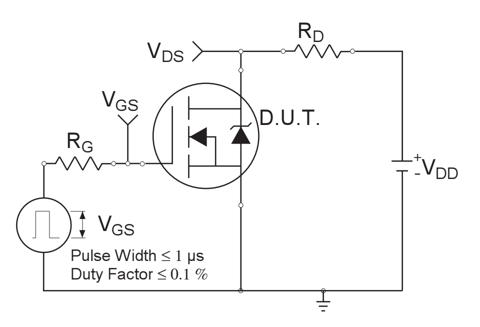


Fig 10a. Switching Time Test Circuit

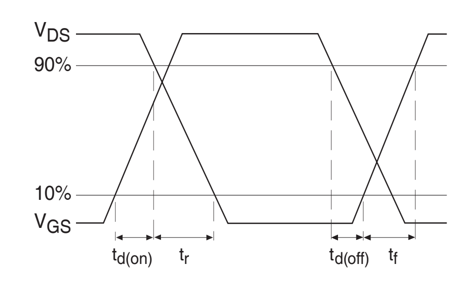


Fig 10b. Switching Time Waveforms

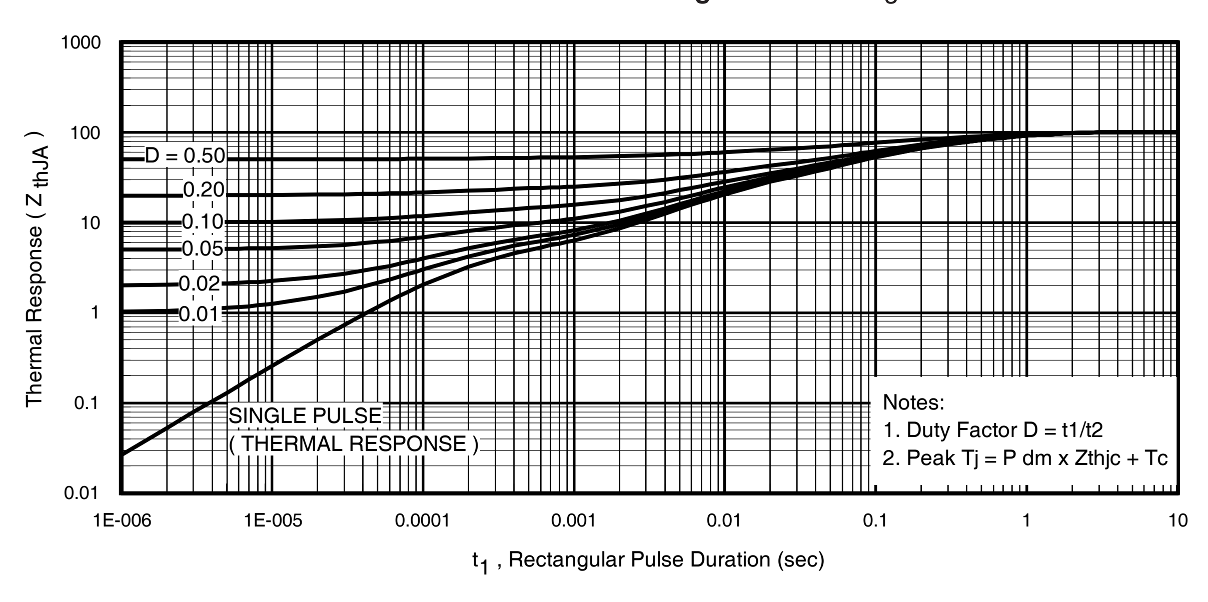


Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

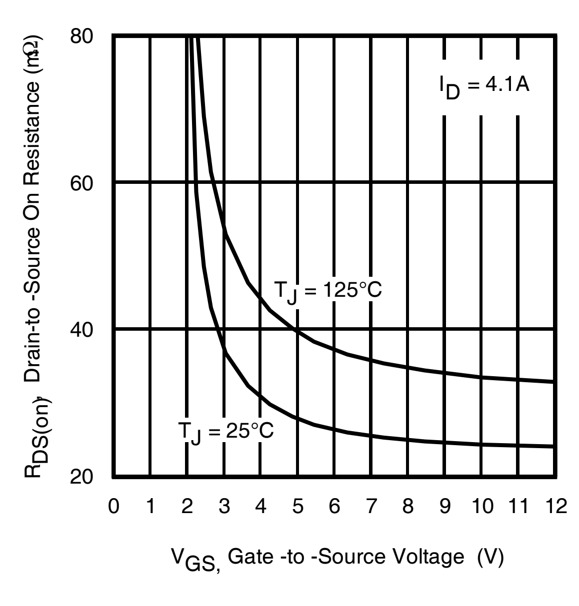


Fig 12. Typical On-Resistance Vs. Gate Voltage

R_{DS}(on), Drain-to -Source On Resistance (mΩ)

120
100
80
60
40
20

0 5 10 15 20 25 30

I_D, Drain Current (A)

Vgs = 4.5V

Vgs = 10V

Fig 13. Typical On-Resistance Vs. Drain Current

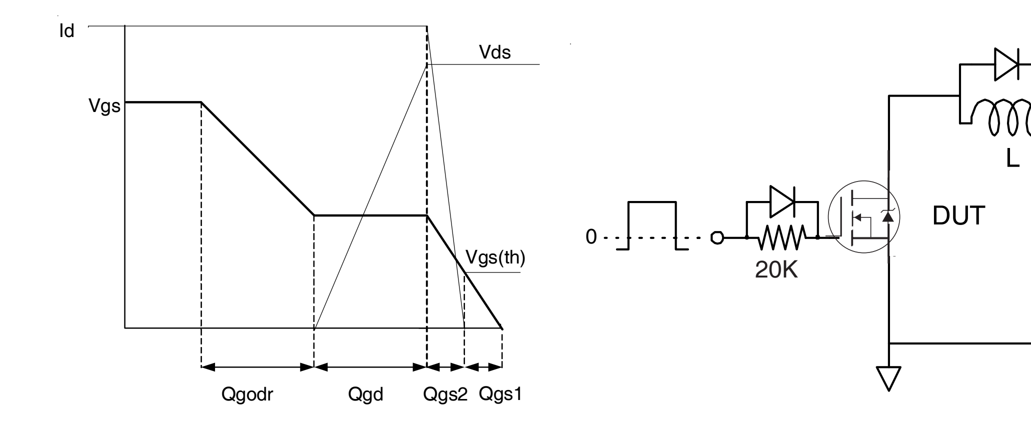


Fig 14a. Basic Gate Charge Waveform

Fig 14b. Gate Charge Test Circuit

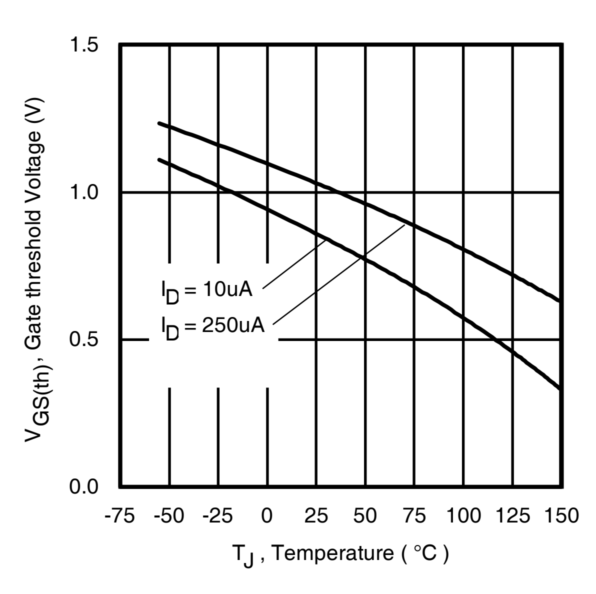


Fig 15. Typical Threshold Voltage Vs. Junction Temperature

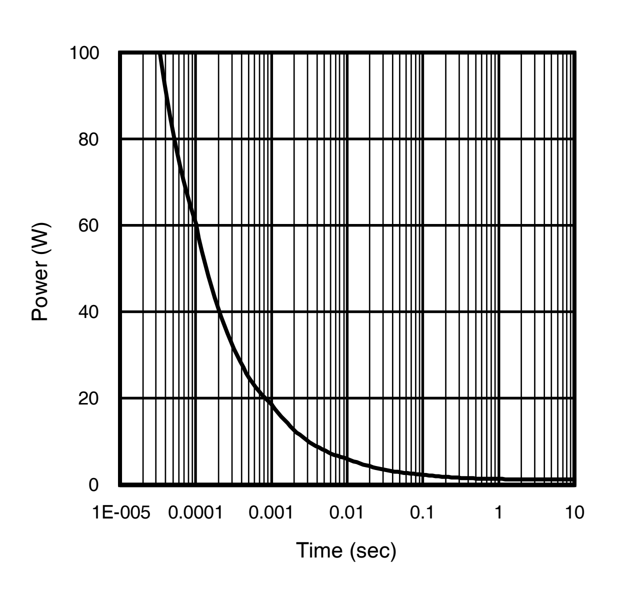
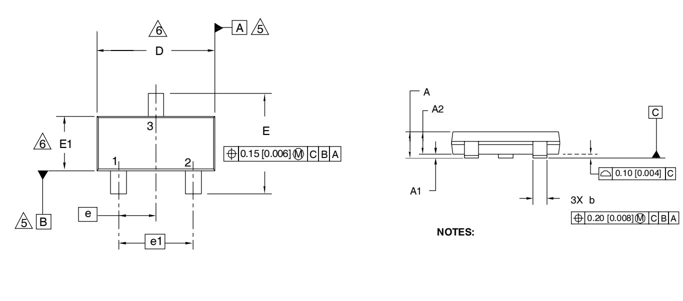


Fig 16. Typical Power Vs. Time

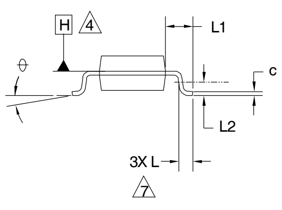


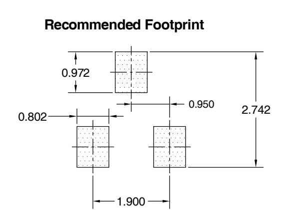
Micro3™(SOT-23) Package Outline

Dimensions are shown in millimeters (inches)



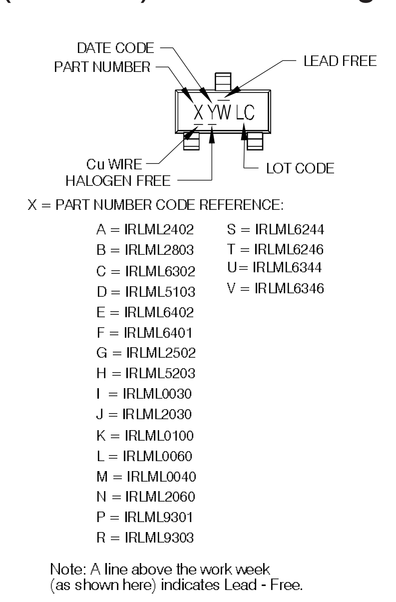
DIMENSIONS				
SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.89	1.12	0.035	0.044
A1	0.01	0.10	0.0004	0.004
A2	0.88	1.02	0.035	0.040
b	0.30	0.50	0.012	0.020
c	0.08	0.20	0.003	0.008
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.083	0.104
E1	1.20	1.40	0.047	0.055
e	0.95	BSC	0.037	BSC
e1	1.90	BSC	0.075	BSC
L	0.40	0.60	0.016	0.024
L1	0.54	REF	0.021	REF
L2	0.25	BSC	0.010	BSC
θ	0	8	0	8





1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1994
2. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
3. CONTROLLING DIMENSION: MILLIMETER.
4. DATUM PLANE H IS LOCATED AT THE MOLD PARTING LINE.
5. DATUM A AND B TO BE DETERMINED AT DATUM PLANE H.
6. DIMENSIONS D AND E1 ARE MEASURED AT DATUM PLANE H. DIMENSIONS DOES NOT INCLUDE MOLD PROTRUSIONS OR INTERLEAD FLASH. MOLD PROTRUSIONS OR INTERLEAD FLASH SHALL NOT EXCEED 0.25 MM [0.010 INCH] PER SIDE.
7. DIMENSION L IS THE LEAD LENGTH FOR SOLDERING TO A SUBSTRATE.
8. OUTLINE CONFORMS TO JEDEC OUTLINE TO-236 AB.

Micro3™(SOT-23) Part Marking Information

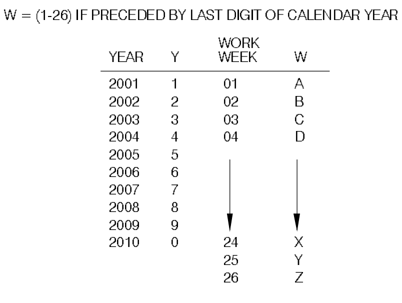


X = PART NUMBER CODE REFERENCE:

A = IRLML2402
B = IRLML2803
C = IRLML6302
D = IRLML5103
E = IRLML6402
F = IRLML6401
G = IRLML2502
H = IRLML5203
I = IRLML0030
J = IRLML2030
K = IRLML0100
L = IRLML0060
M = IRLML0040
N = IRLML2060
P = IRLML9301
R = IRLML9303

S = IRLML6244
T = IRLML6246
U= IRLML6344
V = IRLML6346

Note: A line above the work week (as shown here) indicates Lead - Free.



W = (1-26) IF PRECEDED BY LAST DIGIT OF CALENDAR YEAR

YEAR	Y	WORK WEEK	W
2001	1	01	A
2002	2	02	B
2003	3	03	C
2004	4	04	D
2005	5		
2006	6		
2007	7		
2008	8		
2009	9		
2010	0	24	X
		25	Y
		26	Z

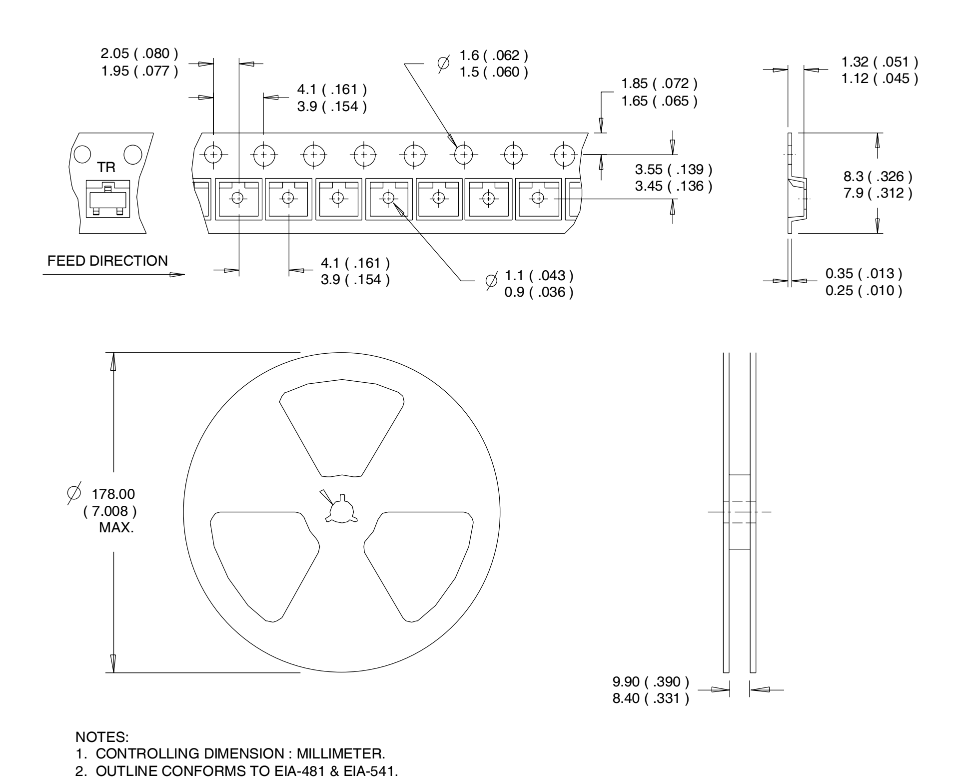
W = (27-52) IF PRECEDED BY A LETTER

YEAR	Y	WORK WEEK	W
2001	A	27	A
2002	B	28	B
2003	C	29	C
2004	D	30	D
2005	E		
2006	F		
2007	G		
2008	H		
2009	J		
2010	K	50	X
		51	Y
		52	Z

Note: For the most current drawing please refer to IR website at: http://www.irf.com/package/

Micro3™(SOT-23) Tape & Reel Information

Dimensions are shown in millimeters (inches)



Note: For the most current drawing please refer to IR website at: http://www.irf.com/package/



Orderable part number	Package Type	Standard Pack		Note
		Form	Quantity	
IRLML6246TRPbF	Micro3™(SOT-23)	Tape and Reel	3000	

Qualification information†

Qualification level	Consumer†† (per JEDEC JESD47F ††† guidelines)	
Moisture Sensitivity Level	Micro3™(SOT-23)	MSL1 (per IPC/JEDEC J-STD-020D†††)
RoHS compliant	Yes	

† Qualification standards can be found at International Rectifier's web site http://www.irf.com/product-info/reliability

†† Higher qualification ratings may be available should the user have such requirements. Please contact your International Rectifier sales representative for further information: http://www.irf.com/whoto-call/salesrep/

††† Applicable version of JEDEC standard at the time of product release.

Notes:

① Repetitive rating; pulse width limited by max. junction temperature.
② Pulse width ≤ 400μs; duty cycle ≤ 2%.
③ Surface mounted on 1 in square Cu board
④ Refer to application note #AN-994.



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